

Attribution of Evolving North American Climate Conditions

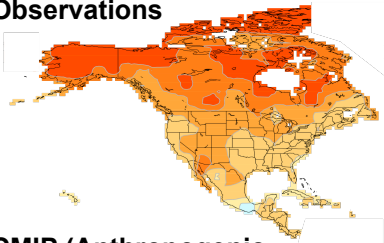
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¹NOAA/ESRL/PSD, ²CIRES/CU and ³NOAA/NCEP/NWS

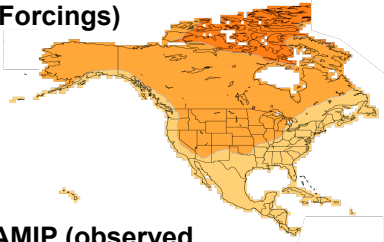


1970-2007 Trend

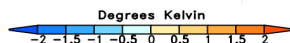
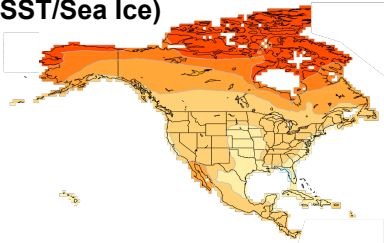
Observations



CMIP (Anthropogenic Forcings)



AMIP (observed (SST/Sea Ice))

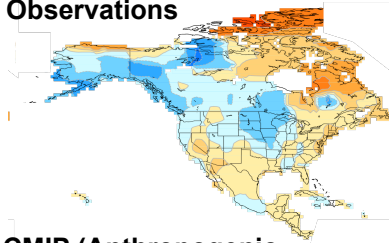


Q: What caused North American warming since 1970?

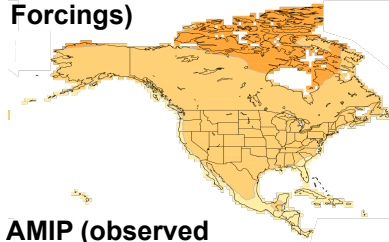
A: Model simulations indicate that most of the observed warming was due to anthropogenic forcing. The physical process of continental warming was via the influence of SST and sea ice changes.

2008 Anomalies

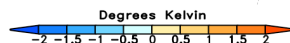
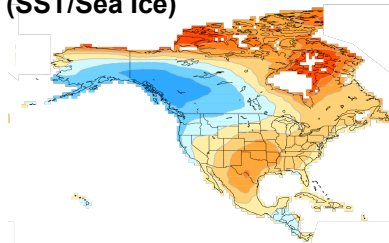
Observations



CMIP (Anthropogenic Forcings)



AMIP (observed (SST/Sea Ice))

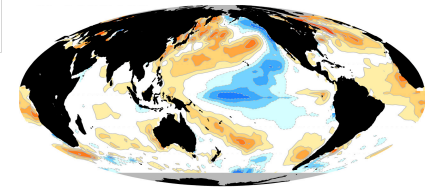
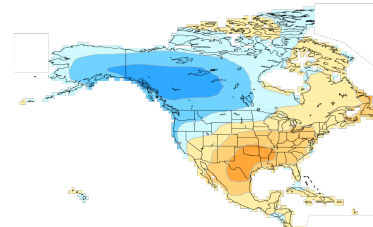


Q: Why did the warming not continue in 2008?

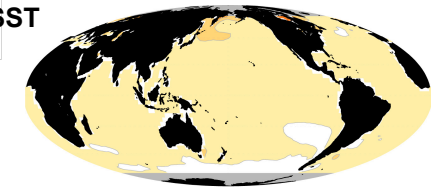
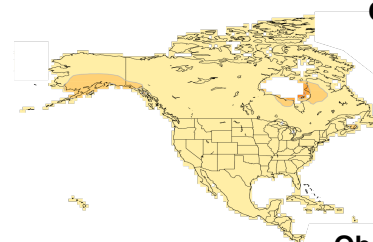
A: Model simulations indicate that 2008 coolness was caused by a strong bout of naturally-induced cooling. This resulted from the continents sensitivity to unusually cold SSTs in the tropical Pacific.

Appraisal of 2008 Climate Conditions

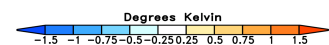
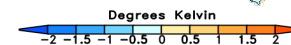
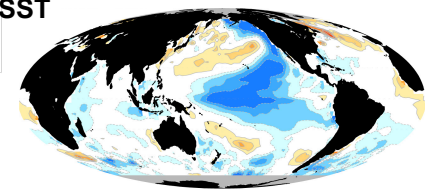
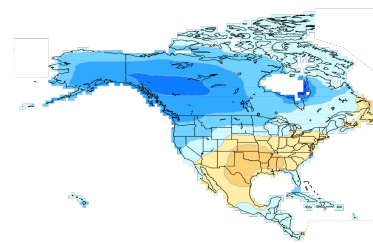
Observed SST



CMIP SST



Obs - CMIP SST



Q: What was the natural versus anthropogenic impact on 2008 North American temperatures?

A: AGCMs forced by estimates of the natural and anthropogenic components of 2008 SST conditions indicate that the warmth induced by the latter was overwhelmed by the coolness induced by the natural state of SSTs. 2008 NA temperatures would have been considerably cooler in the absence of anthropogenic forcing.